

## **ABSTRACT**

A method and apparatus for a tunable optical spectrum analyzer that can measure the optical spectrum of a demultiplexed DWDM signal are presented. The signal level and Optical Signal to Noise Ratio (OSNR) of an individual channel of the DWDM signal can be obtained from the measured optical spectrum. The device employs a rapid tuning and detection technique to obtain the optical spectrum of the incoming signal. In a preferred embodiment the apparatus is fabricated on a single chip resulting in a compact measurement device. Using the device of the preferred embodiment, single channel OSNR can be determined in as small a time interval as approximately 225 microseconds. Using an array of these devices an entire DWDM mixed signal can be monitored as to OP and OSNR in the same time interval.

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